Hanson
HEIDELBERGCEMENT Group

Hanson Material Service
Federal Quarry
9101 W 47th St
McCook, IL 60525

February 25, 2021

Dear Neighbor:

The Hanson Material Service Federal Quarry in McCook recently transitioned from surface mining of limestone to underground mining. You may, on occasion, feel minor vibrations caused by our blasting. From 1990-2018, we surface mined the southern end of our property and these ground vibrations were more likely to be felt near the intersection of East Avenue and Plainfield Road. Currently, we are mining in the central and northern sections of our property and it is more likely that the vibrations may be felt near the intersection of 47th Street and East Avenue. The underground mining will progress to the north and east during 2021.

Mining underground requires smaller, more frequent blasting than surface mining. Currently, the underground mining activities include drilling and blasting five or six times per week in order to dislodge the limestone deposits for further processing. We are scheduled to blast underground between 1-3 p.m. Monday through Saturday. We are not mining under your property; we are only mining on our own property.

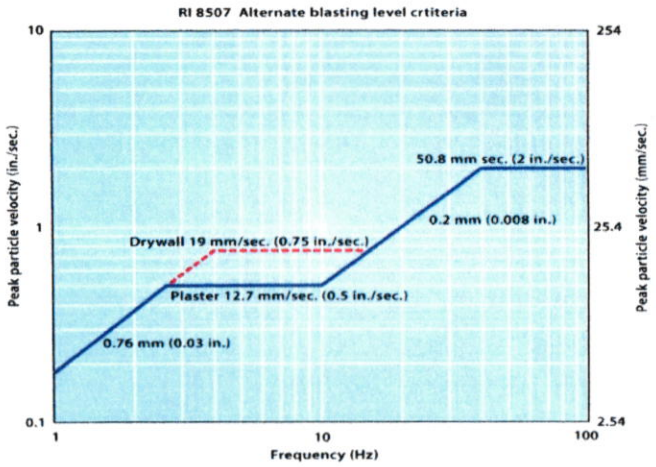
Please know that Hanson follows all applicable laws and regulations to protect the health and safety of our employees and our neighbors. We also endeavor to design the blasts to reduce environmental impacts and control ground and air vibrations at nearby structures and homes.

Enclosed with this letter is a pamphlet that may answer more of your questions. If at any time you have questions or concerns, please feel free to call the Lyons Township Quarry Advisory Council Hotline at 866-WeHearU (866-934-3278).

Sincerely,

Bret Thompson
Plant Manager

U.S. Bureau of Mines "Z-chart"



Examples of vibrations caused by everyday activities

Activity	Ground Vibration Equivalency (up to)
Walking	0.29 in/sec
Entrance door slam	0.60 in/sec
Sliding glass door slam	1.40 in/sec
Sinking nails	2.16 in/sec

How are the vibrations measured?

A blasting seismograph is a very sensitive instrument designed to measure the intensity of ground vibrations and air-blast. Blasting seismographs are manufactured to specifically measure the vibrations from blasting. The resulting measurements are on a different scale from those used for monitoring earthquake vibrations or noise level meters. As such, the particle velocity measured by blasting seismographs cannot be compared to earthquake measurements made on the Richter scale or noise meters.

Underground Mining

Very little surface mining remains at Federal Mine. In 2020, Hanson exclusively mined underground from within the existing footprint of our property. Underground mines require smaller, more frequent blasts to remove the limestone. A typical underground blast that is the same size as a surface blast will be less intrusive to surrounding neighbors because the air blast is minimized due to the ground above the blast muffling the air-blast. In addition, ground vibration would also be reduced because the blasts are at least 250 feet deeper than a quarry blast and therefore, further away from neighbors. A time delayed blasting technique is used to not only increase blast efficiency, but to decrease ground vibrations.

This is all good information, but what about the cracks in my walls, or my foundation, or my windows? They must be caused by the mine, right?

Hanson takes many precautions in its blasting practices to prevent damage to the surrounding homes. The regulations set by the Illinois Department of Natural Resources require quarries to stay below certain vibration limits in order to prevent any damage. All buildings, like everything else, deteriorate over time; some quicker than others depending upon their construction. Cracks in walls and foundations in a home or other structure are quite common and are generally the result of normal aging and settling. 2020 mine blast ground vibrations recorded at seismographs were all less than 85% of the damage threshold.

Where do I get more information?

Hanson Material Service strives to establish and maintain trusting relations with our neighbors. If you would like more information or have concerns, please contact us via the Lyons Township Quarry Advisory Council Hotline at 866-WeHearU (866-934-3278).

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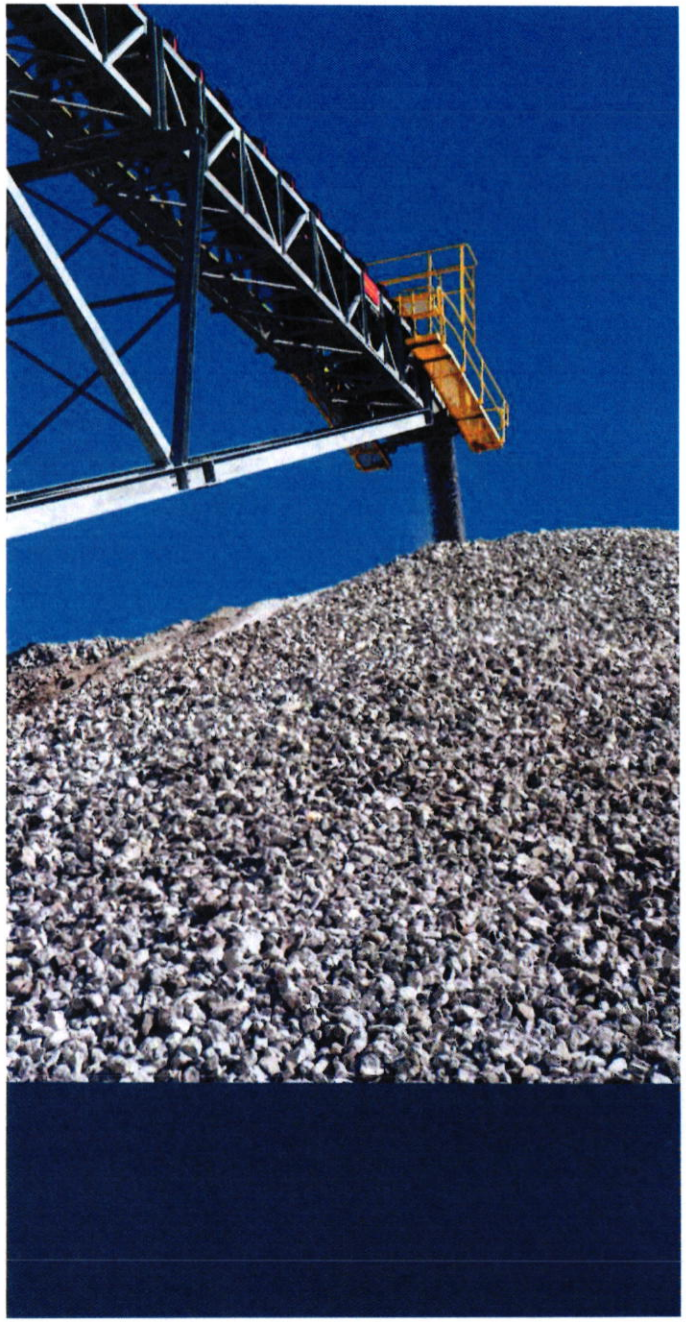


Why do we need a limestone mine?

The mine near your house provides essential raw materials for the construction and maintenance of roads, driveways, sidewalks, foundations, bridges, parking lots, homes and stores in your community. Crushed limestone from mines comprises about 95% of the material in an asphalt ("black-top") driveway or road and about 80% of the material in a concrete sidewalk or bridge deck. The Hanson Material Service Federal Mine typically serves customers within a 10 - 15-mile radius.

Why does the mine have to be here?

Mines are located where high-quality stone reserves were deposited by nature. There are limited areas around Chicago that allow high quality limestone to be mined that meets the strict quality requirements for concrete and asphalt.

Why do limestone mines have to blast?

Blasting is the only way to transform solid rock deposits into smaller rocks that can then be processed for sale.

Who regulates blasting and explosives?

The Illinois Department of Natural Resources' regulations contain specific limits for quarry blasting and sets the limits for "air blast" and "ground vibrations" as well as requirements for monitoring each quarry blast by seismograph(s).

Does the mine use dynamite?

Gone are the days of dynamite and the plunger box used by Wile E. Coyote in his attempts to get the roadrunner. A licensed blaster performs all of the blasting using state-of-the-art technology. Blasts are designed to reduce environmental impacts and control ground and air vibrations at nearby structures and homes.

How does blasting work?

First a drill-rig drills the blast holes laid out in a specific pattern and depth designed by the blaster. Then, the blaster fills the holes with a pre-determined amount of explosives such as, "ANFO" (ammonium nitrate and fuel oil) and adds an electronic detonation charge. Each blast hole is set to go off in series within milliseconds of each other. The time separation of each blast hole is just one of the methods that the blaster uses to reduce vibrations generated by blasting.

Why do I sometimes feel or hear the blast?

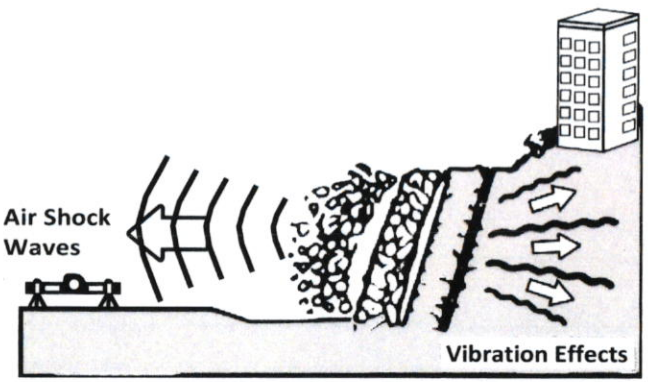
When explosives are detonated, much of the energy is used to break up the solid rock. Some of the energy, however, is left over. This energy is converted into vibrations that travel away from the blast area through both the ground and air.

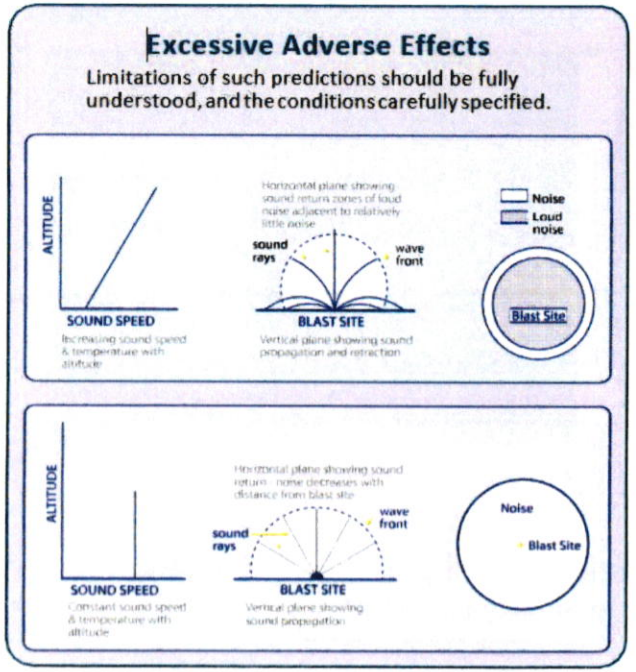
The vibration through the air is called air over-pressure or, "air-blast." Air over-pressure is measured in decibels (dB). While air-blast may be the most annoying aspect of blasting, it rarely is responsible for any damage. Research has shown the damage from air-blast does not occur until approximately 140 dB. Air-blast normally decreases as the distance from the blast increases but can be affected by many factors, including weather and atmospheric conditions. Underground mining greatly reduces air-blast generated at the mine.

Ground vibrations are also generated during a mine blast. As the ground vibration travels away from the blast area, the level of vibration rapidly decreases. The intent of the mine blast is to use as much energy on breaking up the rock as possible to facilitate the loading, crushing and screening processes. Excess vibrations in the ground and air are the result of inefficient use of explosives – that means wasted money.

If I can feel the blast shake things in my house, it must be doing damage, right?

Ground vibration can cause shaking in a structure. Unless a person inside a house is expecting a blast to occur, it can be startling when the vibration reaches the structure. How a person perceives a blast will vary. It depends on where the person is in the structure, what they are doing and how sensitive that person is to vibrations. Often, the suddenness of a blast, combined with sensitivity to vibrations, can make the blast seem worse than it actually is.





As a rule of thumb, a person will begin to feel blast vibrations at levels as low as 0.02 in/sec. This level is far below the level at which research has shown that damage may occur, and far below the level at which a mine would be considered out of compliance with the regulations.

There has been extensive research to determine the effects of vibrations from repeated blasting on residential structures. This research has led the United States Bureau of Mines (USBM) to offer widely accepted guidance on blast vibration levels that would not typically produce structural or cosmetic damage of common construction materials. The guidance is summarized by the USBM "Z-chart" and is often used by regulating agencies to specify acceptable blast vibrations in mine permits. The Z-chart plots the particle velocity of the ground movement versus the frequency of the vibrations. Generally, higher frequency blast vibrations are less likely to cause damage to structures than lower frequency vibrations of the same particle velocity. Vibration levels below the Z-shaped line have been proven not to cause damage to structures.

Common human activities that are repeated many times daily in the normal occupancy of a residential structure, however, create ground vibration equivalencies that exceed typical blast induced vibrations shown in the Z-chart.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